EPA Region 7 Laboratory Analysis Information

04/05/2019 08:58

ASR: 8209

Analysis Name: Metals in Water by ICP-AES
Analysis Request No 1

Analysis Short Name Met W.3G
Matrix: Water
Parameter Class: Metals
Analysis Status: Current

Analysis Summary:
This analysis is performed following R7 Method 3122.3 and provides analytical data for up to 24 elements in water. If dissolved metals are desired, the sample should be filtered and acidified in the field. Many of the elements are found naturally in soil and may enter the water supply through natural leaching and weathering, but elevated concentrations of some elements may occur due to improper waste disposal or pesticide runoff. Water samples analyzed for metals originate from an array of different sources, as well as different programs, such as Superfund and RCRA. However, this method still satisfies all of the applicable program requirements for both Superfund and RCRA (and potentially other programs as well).

The presence and concentrations of these elements are determined by the water sample going through digestion phase followed by analysis of the extract. An aliquot, 50 milliliters, of the sample is acidified by adding 1 milliliters nitric acid (HNO3) and 1.5 milliliters hydrochloric acid (HCl), and then digested in a block digestor at 85-95 C until the apparent volume is 25 - 50 milliliters. The digested sample is brought up to 50 milliliters with DI water and then an aliquot is centrifuged for analysis. The sample is analyzed by inductively coupled argon plasma (ICAP) atomic emission spectroscopy. The detection limits range from 0.42 ppb (ug/L) for beryllium to 1.50 ppm (mg/L) for sodium. Typical detection limits are in the low (less than 15) ppb range for most metals. Matrix interferences sometimes occur and may complicate the analytical process. If there is a matrix interference, dilutions may be performed and higher detection limits reported. Potential other sources of interferences include contaminated laboratory equipment and/or chemicals. However, analytical interferences are typically the result of the sample matrix and not laboratory materials.

Method: RLAB Method 3122.3G **Date Adopted:** 04/06/2018 **Date Replaced:**

Method Desc:
EPA Region 7 RLAB Method 3122.3G

Method Title:
Analysis of Metals by Inductibely Coupled Plasma - Atomic Emission Spectrometry

Method Summary:
(Not Available)

Base Method	Title	Type
Method 200.7	Determination of Metals and Trace Elements in Water and Wastes by Inductively Coupled Plasma-Atomic Emission Spectrometry -Revision 4.4	Analysis
SW846 6010B	Analysis of Metals by ICP	Analysis

Capable Labs: **EPA (In-House)**
ESAT (In-House)
CLP (Out-Source)
REST (Out-Source)

Previous Method: RLAB Method 3122.3F **Date Adopted:** 09/23/2013 **Date Replaced:** 04/06/2018

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Sample Holding Time 180 **Days** **Extract Holding Time:** 0 **Days** **No Of Containers:** 1

Container Type: 1 Liter plastic bottle **Weight Type:** N/A **No Of Tags:** 1

Preservative: HNO3 acidify, 4 Deg C

Sampling Info:
(Not Available)

Sampling Narative:
(Not Available)

Report Flag			Analyte Name	CAS Number	TRL	Con Of Concern	Units
Default	Requested	EPA					
Yes	Yes	Yes	Aluminum	7429-90-5	50		ug/L
Yes	Yes	Yes	Antimony	7440-36-0	50		ug/L
Yes	Yes	Yes	Arsenic	7440-38-2	25		ug/L
Yes	Yes	Yes	Barium	7440-39-3	10		ug/L
Yes	Yes	Yes	Beryllium	7440-41-7	3		ug/L
Yes	Yes	Yes	Cadmium	7440-43-9	3		ug/L
Yes	Yes	Yes	Calcium	7440-70-2	2		mg/L
Yes	Yes	Yes	Chromium	7440-47-3	15		ug/L
Yes	Yes	Yes	Cobalt	7440-48-4	10		ug/L
Yes	Yes	Yes	Copper	7440-50-8	5		ug/L
Yes	Yes	Yes	Iron	7439-89-6	50		ug/L
Yes	Yes	Yes	Lead	7439-92-1	50		ug/L
Non	No	No	Lithium	7439-93-2	5		ug/L
Yes	Yes	Yes	Magnesium	7439-95-4	2		mg/L
Yes	Yes	Yes	Manganese	7439-96-5	5		ug/L
Yes	Yes	Yes	Molybdenum	7439-98-7	15		ug/L
Yes	Yes	Yes	Nickel	7440-02-0	20		ug/L
Yes	Yes	Yes	Potassium	7440-09-7	2		mg/L
Yes	Yes	Yes	Selenium	7782-49-2	50		ug/L
Con	No	No	Silicon	7440-21-3			ug/L
Yes	Yes	Yes	Silver	7440-22-4	25		ug/L
Yes	Yes	Yes	Sodium	7440-23-5	5		mg/L
Non	No	No	Strontium	7440-24-6	10		ug/L
Yes	Yes	Yes	Thallium	7440-28-0	50		ug/L
Yes	Yes	Yes	Titanium	7440-32-6	20		ug/L
Yes	Yes	Yes	Vanadium	7440-62-2	10		ug/L
Yes	Yes	Yes	Zinc	7440-66-6	25		ug/L
Con	No	No	Zirconium	7440-67-7			ug/L

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Default Report Flag:	Con	Analyte that is not reported from in-house analysis and must be obtained through an out-source contract lab.
	Non	Analyte that is not routinely reported from in-house analysis, but can be if it is needed.
	Yes	Analyte that is routinely reported from in-house analysis.
Requested Report Flag:	No	Result will not be stored or reported.
	Yes	Result will be stored and reported.